

Application No.: 10/823,214

Docket No.: JCLA12708

## REMARKS

### Present Status of the Application

In the Final Office Action dated December 28, 2005, claims 5-6, 8, and 9 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement.

Furthermore, claims 1-6, 8, and 9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1-4 are rejected under 35 U.S.C. 102(b) as being anticipated by Bourgeois et al (US-5,859,520, hereinafter "Bourgeois"). Claims 5-9 are rejected under 35 U.S.C. 102(b) as being anticipated by Yamauchi et al (US-4,409,526, hereinafter "Yamauchi").

After entry of the claim amendments and traversing of rejections, claims 1-6, 8 and 9 remain pending in the present application.

### Discussion of claim rejections under 35 USC 112

*In the Office Action, claims 5-6, 8, and 9 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement.*

In response to the rejections of claims 5-6, 8, and 9 under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement, the following are the traversal:

Contrary to the assertion by the Examiner, the specification does indeed fully describe how the method can be terminated taking into account of "the step of resetting the frequency" in claim 5.

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The support for claim 5 is found in FIG. 7 of the present invention in which a “NO” response to the (step 130) is clearly indicated by the arrowed lines which terminates at the “END” step in FIG. 7. The aforementioned support is applicable because drawings are perfectly valid for use as support required for the written description requirement.

On the other hand, a “YES” response to the (step 130) in FIG. 7 clearly has a different route from the above for a “NO” response, and the route is towards the (step 140) instead, in which the frequency of the control signal is resetted. As a result, FIG. 7 clearly describes how the method can be fully realized based on the steps claimed in claim 5. Furthermore, if the zero crossing point is not detected, the step of “resetting the frequency of the control signal” would not be executed at all since it is already terminated at a previous step, thereby avoiding any potential logic flaw for having to execute a step after already being terminated. And if the zero crossing point were indeed detected, it obviously would not terminate at the “terminating the method upon not detecting the zero crossing point” step based upon FIG. 7, thereby also avoiding any logic flaw for premature termination.

Furthermore, it should be emphasized that the steps in claim 5 must be read or interpreted in light of the specification, especially including FIG. 7, and not in a vacuum.

Regarding claim 6, the support is found in paragraph [0013] of the present invention as follows: “In the above method, whether a time of a zero crossing point is determined again when the rotor speed is larger than the lower speed.”

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Regarding claim 8, the support is found in paragraph [0013] of the present invention as follows: "...[t]he control signal is a pulse width modulation (PWM) signal."

Regarding claim 9, the support is found in paragraphs [0013] and [0038] of the present invention.

Based upon the above traversal, the rejections to claims 5-6, 8, and 9 under 35 U.S.C. 112, first paragraph, should be withdrawn, and claims 5-6, 8, and 9 should be allowed.

*The Office Action also rejected claims 1-6, 8, and 9 under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.*

To overcome the rejections to claims 1 and 3, the following claim amendments are made to claims 1 and 3:

The claim limitation "wherein a non-inverting input is connected via a single direction switch to a free end of a phase at a cathode end" is amended to "wherein one input of the comparator is connected via a single direction switch to the second end of a phase" in claim 1, and the claim limitation "wherein a non-inverting input is connected via a diode to a free end of a phase at a cathode end" is amended to "wherein one input of the comparator is connected via a diode to the second end of a phase" in claim 3.

The support for the above claim amendments is found inherently / implicitly in paragraphs [0008], [0009], and [0026] and in FIG. 5 of the present invention. By combining the teachings of the above paragraphs, the amended portions to claims 1 and 3 are fully supported. This is true

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because “non-inverting input” is equivalent to “one input”, and “cathode end” is equivalent to “second end of the phase”. Therefore, no new matter is introduced.

The detailed explanation of the above equivalency is as follows: Using FIG. 5 of the present invention and the common knowledge possessed by a person skilled in the art, it can be deduced that the “one input” in Paragraph [0008] of the present invention is equivalent to the non-inverting “+” input to the comparator P in FIG. 5 and the “another input” in Paragraph [0008] is equivalent to the inverting “-“ input to the comparator P in FIG. 5. Furthermore, it can also be deduced that the “second end” of the phase in Paragraph [0008] is equivalent to  $V_{bg}$ , which is also at the cathode end of d4 as shown in FIG. 5. Furthermore, it is then evident that the “single direction switch” is the d4 shown in FIG. 5. Based upon the above analysis under equivalency of elements used in claim construction, the following teachings in Paragraph [0026]: “...A voltage comparator P of the position detection circuit E has a non-inverting input connected via a diode d4 to the free end of phase B” is then clearly equivalent to “... A voltage comparator of the position detection circuit has a one input connected via a single direction switch to the second end of a phase”.

Therefore, based upon the above equivalency, the aforementioned added claim limitation to claims 1 and 3 are then inherently and indirectly supported in Paragraphs [0008] and [0026] of the present invention. Therefore, no new matter is introduced.

The above claim interpretation is performed via taking into account of “... the teachings of the prior art; and ....claim interpretation that would be given by one possessing the ordinary level of skill in the pertinent art at the time the invention was made...” (taken from MPEP 2173.02);

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the above claim amendments based upon the equivalency of the same elements which are differently described in the “Summary of the Invention” section and the “Detailed Description of the Preferred Embodiments” section of the patent application should still meet the criteria under “whether the claims set out and circumscribe a particular subject matter with a reasonable degree of clarity and particularity.” Indeed according to MPEP 2173.02, “[t]he examiner’s focus during examination of claims for compliance with the requirement for definiteness of 35 U.S.C. 112, second paragraph, is **whether the claim meets the threshold requirements of clarity and precision, not whether more suitable language or modes of expression are available**..... The essential inquiry pertaining to this requirement is whether the claims set out and circumscribe a particular subject matter with a reasonable degree of clarity and particularity. Definiteness of claim language must be analyzed, not in a vacuum, but in light of:

(A) The content of the particular application disclosure;

(B) The teachings of the prior art; **and**

(C) The **claim interpretation that would be given by one possessing the ordinary level of skill in the pertinent art at the time the invention was made.**”

Furthermore, in regards to the alleged rejection for being unclear as to what the “non-inverting input” belongs to, the aforementioned amended portion in claims 1 & 3: “wherein one input of the comparator” should render the rejection moot based upon the fact that it clearly specifies “one input of the comparator”.

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Regarding the rejection to claim 5, it should be stated that the steps in claim 5 must be read or interpreted in light of the specification, especially FIG. 7, and not in a vacuum. Therefore, it can be seen that no unclarity is present when the claim limitations in claim 5 are fully interpreted using FIG. 7 as already previously traversed in the above sections.

The above traversal also pertain to claims 3, 4, 8, and 9.

Based upon the above traversal, rejections to claims 1-6, 8, and 9 under 35 U.S.C. 112, second paragraph, should be withdrawn, and claims 1-6, 8, and 9 should be allowed.

#### **Discussion of the claim rejections under 35 USC 102**

*The Office Action has rejected Claims 1-4 under 35 U.S.C. 102(b) as being anticipated by Bourgeois et al (US-5,859,520, hereinafter "Bourgeois"). In addition, Claims 5-9 are rejected under 35 U.S.C. 102(b) as being anticipated by Yamauchi et al (US-4,409,526, hereinafter "Yamauchi").*

Applicants respectfully traverse the above rejections as set forth below.

#### **Claims 1 & 3**

Regarding claim 1, the newly-added limitation "wherein one input of the comparator is connected via a single direction switch to the second end of a phase" in claim 1 is further amended to include the following additional limitation "said single direction switch has an anode connected to one input of the comparator and a cathode to receive voltage signal from the second end of a phase" should be clearly patentable over Bourgeois. The support for the above claim limitation is found in FIG. 5 and also in the previous discussions in the above sections.

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Furthermore, the newly-added limitation “wherein one input of the comparator is connected via a diode to the second end of a phase and said diode has an anode connected to one input of the comparator and a cathode to receive voltage signal from the second end of a phase” in claim 3 should also be patentable over Bourgeois. The support for the above limitation can also be found in previous sections as well as in FIG. 5 of the present invention.

Bourgeois in col. 7, lines 25-27 clearly expresses that “a voltage comparator P has a non-inverting input connected via a resistor R to the free end of winding B”, and the “D4” and “d4” are connected to the ground voltage GND instead as is found in col. 7, lines 27-29 in Bourgeois.

Furthermore, not only that Bourgeois does not include the aforementioned “diode” and “single direction switch” at the same location as mentioned in the present invention, FIGs. 5A-1, 5A-2, 5A-3, 5B-1, 5B-2, etc... in Bourgeois indeed show a resistor R (instead of a diode) connected to the voltage comparator and the free end of a phase.

Pending the allowance of claims 1 & 3, dependent claims 2 & 4 should also be allowed.

**Claims 5, 6, 8, 9**

In regards to claim 5, the following claim limitation in claim 5: “terminating the method upon not detecting the zero crossing point” is patentable over Yamauchi because (contrary to the assertion by the Examiner on pages 4-5 of the Office Action) Yamauchi does not teach of “terminating the method upon not detecting the zero cross point.”

The “zero crossing point” in Yamauchi is defined with respect to the analog sinusoidal “magnetic field EHs “ as described in Yamauchi in col. 6, lines 31-38. And the analog sinusoidal “magnetic field EHS“ is further shown in FIG. 7C in Yamauchi.

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On the other hand, the “zero crossing point” in the present invention is defined with respect to the BEMF value as shown in FIG. 6 of the present invention. The BEMF waveform in FIG. 6 of the present invention is clearly different from the sinusoidal “magnetic field EHS” in Yamauchi in FIG. 7C.

Therefore, Yamauchi does not teach of a “zero crossing point” with respect to the BEMF values as shown in FIG. 6 of the present invention.

In addition, “with respect to BEMF values” is not to be seen as reading limitations from the specification into the claims because “zero crossing point” by itself is inadequate to form a definitive “plain meaning” for an element; therefore, support from the disclosure is clearly required and justified to give “zero crossing point” a complete definition as it is also perfectly acceptable to interpret claims in light of the specification as a source of intrinsic evidence. Furthermore, claim elements should not be interpreted in a vacuum as was previously discussed in the above sections.

In regards to the Examiner’s comments in the Office Action on Pages 4-5: “determining whether a time of a zero crossing point for the back electromotive force is detected ..... since the pulses are triggered by the detection of the zero crossing point P. Therefore the reduction of the frequency will not happen)”, the following section in Paragraph [0039] on page 3 of the present invention includes the necessary clarification support: “At step 100, **whether it is time to ZCP detecting is determined**, i.e., whether the expected commutation interval elapses. If not, the



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process moves to end. **If it is time to ZCP detecting**, whether the rotor speed is less than the lower speed is detected at step 110.”

The Examiner had misunderstood the above to be something along the lines of: “the step 100 detect the ZCP of BEMP and in step 130 detect again.” On the other hand, the actual description as contained in Paragraph [0039] teaches the following:

1. “whether it is time to ZCP detecting is determined” is to mean that when to begin to detect the ZCP signal instead of at which moment the ZCP is detected.
2. “if it is time to ZCP detecting” is to mean step 100 in FIG. 7 for determining whether it is time to ZCP detecting for the process, and **not** to mean of step 130.

Pending the allowance of claim 5, claims 6, 8, and 9 should also be allowed.

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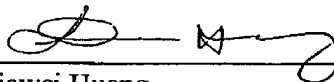
**CONCLUSION**

For at least the foregoing reasons, it is believed that all the pending claims 1-6, 8 and 9 of the present application patently define over the prior art and are in proper condition for allowance. If the Examiner believes that a telephone conference would expedite the examination of the above-identified patent application, the Examiner is invited to call the undersigned.

Date: 3 / 27 / 2006

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